

REMARKS

Reconsideration of the above-referenced application in view of the above amendment, and of the following remarks, is respectfully requested.

Claims 1-5, 7-13, 17-21, 23-30, and 32 are pending in this case. Claim 30 is amended.

The Examiner rejected claims 1-2, 5, 7-13, 17-18, 21, 23-30, 32 under 35 U.S.C. § 103(a) as being unpatentable over Nagata et al. (U.S. Patent 6,232,174) and Greiger et al. (U.S. Patent 5,855,811).

Applicant respectfully submits that claim 1 is patentable over Nagata in view of Greiger as there is no disclosure or suggestion in the references of planarizing the ferroelectric dielectric layer to form a planarized ferroelectric dielectric layer, forming a second electrode layer over the planarized ferroelectric dielectric layer, and cleaning the planarized ferroelectric dielectric layer prior to forming the second electrode layer, as required by claim 1. Greiger teaches a planarization and clean process unrelated to ferroelectrics. The Examiner applies this teaching of Greiger to the teachings of Nagata to suggest planarizing and cleaning each layer in Nagata's process. However, Greiger teaches planarization to correct non-planarity as a result of modification and removal of several deposited layers (Col. 1 lines 12-25). This is not applicable to the ferroelectric layer of Nagata which, along with the lower electrode 7, is deposited on a planarized surface (see col 5, lines 6-20 and FIG. 2b). Greiger is a more global (i.e., larger scale) planarization issue rather than the much smaller scale surface roughness as a result of crystallization of Nagata's ferroelectric layer (col. 5 lines 60-68). There is no suggestion in the references to apply Greiger's planarization and clean solution to correct a surface

roughness due to crystallization issue as in Nagata (with respect to the ferroelectric layer). The suggestion cannot come from Applicant's disclosure. Accordingly, Applicant respectfully submits that claim 1 and the claims dependent thereon are patentable over the references.

Applicant respectfully submits that claims 17 and 30 and the claims dependent thereon are similarly patentable over the references.

The Examiner rejected claims 3-4, 19-20 under 35 U.S.C. § 103(a) as being unpatentable over Nagata et al. (U.S. Patent 6,232,174) and Grieger et al. (U.S. Patent 5,855,811) as applied to claims 1-2, 5, 7-13, 17-18, 21, 23-30, 32 above, and further in view of either Suenaga et al. (U.S. Patent 6,239,457) or Suh (U.S. Patent 6,338,970).

Applicant respectfully submits that claims 3-4 and 19-20 are patentable over the references for the same reason discussed above relative to claims 1 and 17.

The Examiner rejected claims 1-2, 5, 7, 12-13, 17-18, 21, 23, 28-30 under 35 U.S.C. § 103(a) as being unpatentable over Nagata et al. (U.S. Patent 6,232,174) and Lee et al. (U.S. Pub. 2002/0003123).

Applicant respectfully submits that claim 1 is patentable over Nagata in view of Lee as there is no disclosure or suggestion in the references of planarizing the ferroelectric dielectric, forming a second electrode layer over the planarized ferroelectric dielectric layer; and cleaning the planarized ferroelectric dielectric layer prior to forming the second electrode layer. Nagata fails to teach cleaning the planarized ferroelectric dielectric layer. Lee teaches an etchback/clean of a ferroelectric layer to remove a portion of the layer that is damaged as a result of patterning and etching. This occurs after the upper electrode is formed. However, the cleaning/etchback process can also

be used after depositing and annealing the ferroelectric layer to remove a damaged surface portion. In contrast to the claims, however, the clean process is not applied to a planarized surface. While Lee may suggest removing a damaged portion of the ferroelectric layer of Nagata after anneal, there is no suggestion to performing the clean after planarization or in addition to planarization since planarization would presumably also remove any portion damaged by the anneal. Accordingly, Applicant respectfully submits that claim 1 and the claims dependent thereon are patentable over the references.

Applicant respectfully submits that claims 17 and 30 and the claims dependent thereon are similarly patentable over the references.

The Examiner rejected claims 3-4, 19-20 under 35 U.S.C. § 103(a) as being unpatentable over Nagata et al. (U.S. Patent 6,232,174) and Lee et al. (U.S. Pub. 2002/0003123) as applied to claims 1-2, 5, 7, 12-13, 17-18, 21, 23, 28-30 above, and further in view of either Suenaga et al. (U.S. Patent 6,239,457) or Suh (U.S. Patent 6,338,970).

Applicant respectfully submits that claims 3-4 and 19-20 are patentable over the references for the same reason discussed above relative to claims 1 and 17.

Applicant respectfully submits that claims 2 and 18 are further patentable over the references as there is no disclosure or suggestion in the references of planarizing the ferroelectric by CMP. Nagata teaches planarization by etchback instead.

In light of the above, Applicant respectfully requests withdrawal of the Examiner's rejections and allowance of claims 1-5, 7-13, 17-21, 23-30, and 32. If the Examiner has any questions or other correspondence regarding this application, Applicant requests

that the Examiner contact Applicant's attorney at the below listed telephone number and address.

Respectfully submitted,

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